WHITESBOG BLUEBERRIES

WHITESBOG BLUEBERRIES

THIS LITTLE BOOK we hope will answer acceptably the many questions to which we are unable to give full replies by letter. We hope also there will be patience with our difficulty in supplying plants.

OUR TASK, after a variety has been selected, is to multiply it by rooting cuttings until from the one bush we have produced plants enough to set acres, then tens of acres and ultimately thousands of acres. The inherent tediousness of this task is increased by the pernickety nature of the cuttings which are exceedingly fussy as to the exact condition of soil, temperature, moisture, light etc., under which they will make roots. This is in marked contrast with the vigor and hardiness of the plants, once they are well rooted.

OUR PROGRESS has reached the point where we have the first acres set with Rubel, Harding and Sam. We also have stock of each of the described varieties to supply cuttings for a rapidly increasing quantity of plants.

THIS SEASON we feel apologetic that we are able to sell but two or three thousand plants. In order that WHITESBOG Blueberries may be tried as widely as possible, these are offered in sample sets. Two sets are the utmost we can grant any one customer.

PRICES, 1922

SET No. 1	**Rubel**	1 plant	Postpaid.....$4 00
	Sam	1 plant	West of Mississippi.... 4 50
	Harding	1 plant	
SET No. 2	**Rubel**	1 plant	Postpaid..... 6 00
	Sam	1 plant	West of Mississippi.... 6 50
	Harding	1 plant	
	Pioneer	1 plant	

The plants offered are from 6 to 12 inches high and have been growing in 3-inch pots. If given proper soil and moisture, they should produce some fruit the summer of 1923. Larger plants can *not* be supplied, as practically all bushes of the WHITESBOG varieties have been made into cuttings, and we sell none of inferior varieties. Orders should be in our hands by March 1 and will be shipped as soon as weather permits. After being received, plants may be kept with perfect safety in the original packings in a cold place until the ground is in condition to set them.

PEAT—We have arranged to supply peat for preparing Blueberry ground when local material is not easily available. This may be used as shipped or one-quarter its bulk of sand may be added. With the peat a mulch of sound vegetable matter is desirable as explained under Blueberry Culture on page 19, but if this is not convenient more peat may be added each year as a top dressing.

PEAT, 2 bushel bags each, $1.50.

1 to 2 bags will be needed for each set of plants.

SHIPMENT OF PEAT will be made by freight unless shipment by express is requested. In either case the purchaser pays transportation.

ADDITIONAL COPIES of this booklet "WHITESBOG BLUEBERRIES" 25 cts. each.

PRICE LISTS, up to date, will be mailed as plants become available.

TERMS: Please send cash with all orders, preferably in the form of a Post Office money order.

JOSEPH J. WHITE, Inc.

Elizabeth C. White, Treasurer

WHITESBOG BLUEBERRIES

JOSEPH J. WHITE, Inc.
NEW LISBON, N. J.

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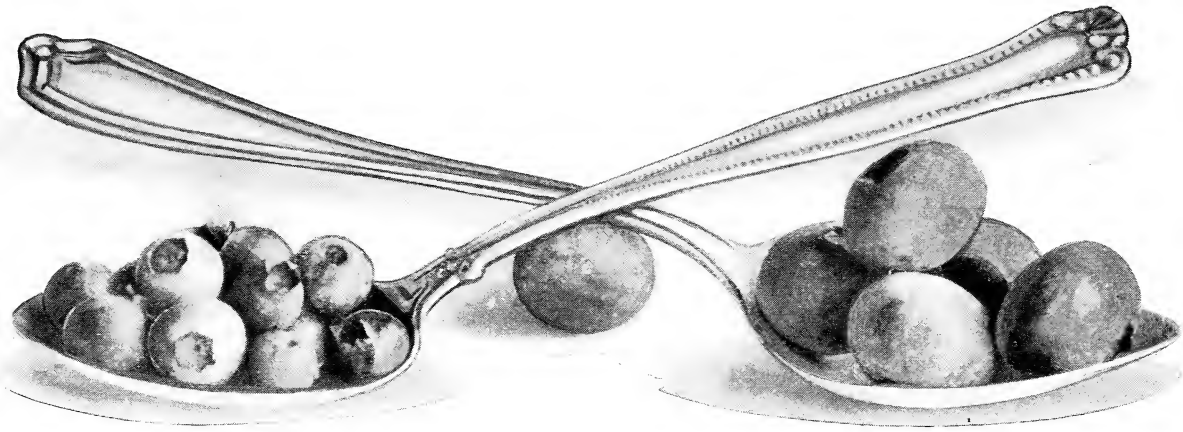


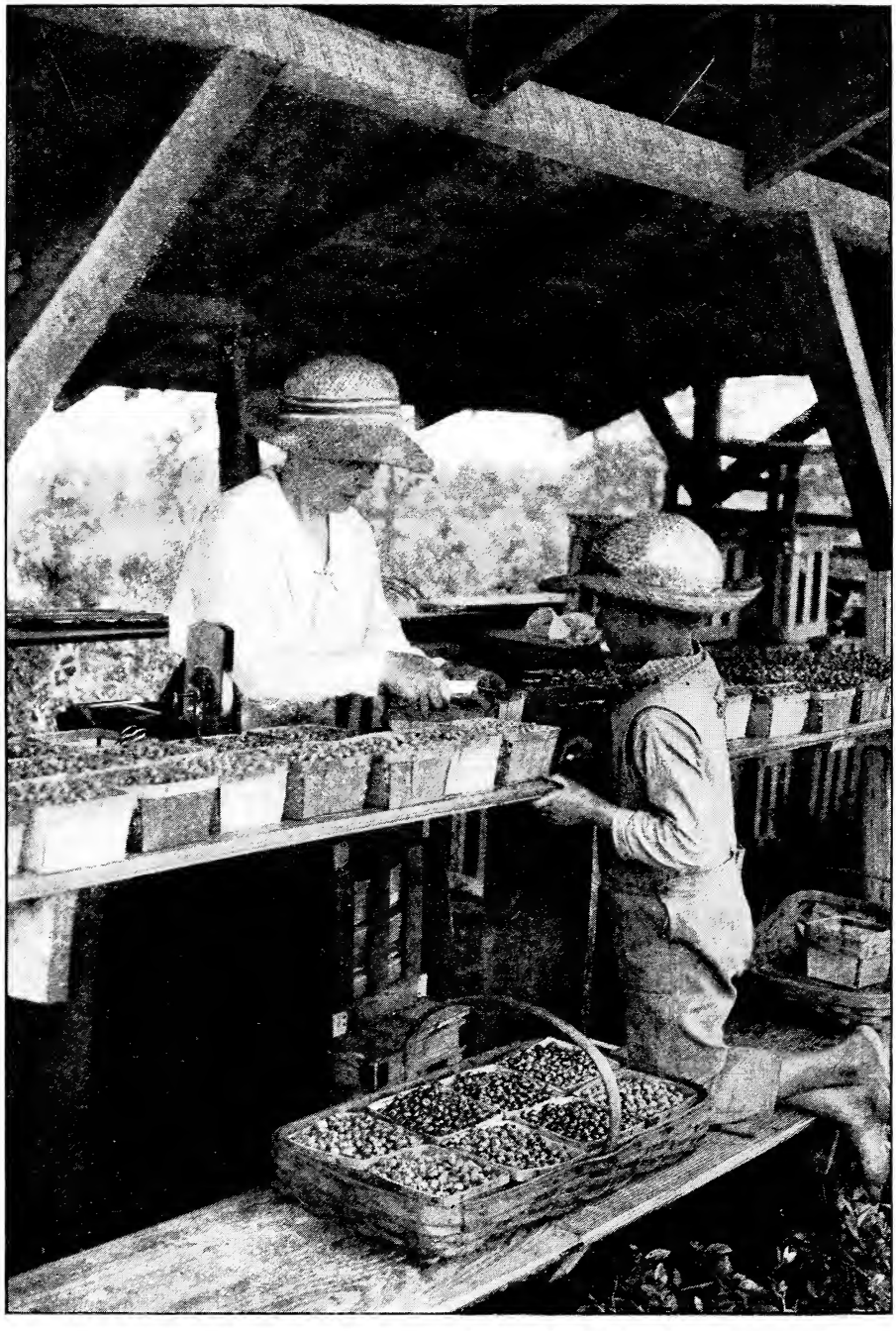
Blueberries *and* BLUEBERRIES

By J. HORACE McFARLAND

THIS is a call on the imagination of the reader. When it has been answered, he will know why the heading is in two sizes of type; why the subject name is repeated.

Not all of us have seen Alaska, America's northwestern territorial extension, nor have all of us seen Hawaii, our dots in the central Pacific, or diminutive Guam, or the sub-equatorial Philippines. The maps locate these faraway parts of the United States, but it is the imagination that sets before one the blue-iced glaciers of the Far North, the soft airs and the mighty waves of Honolulu, and the tropical richness of the land that Dewey fought for. We believe they exist, though we have not seen them, these distant parts of our nation. Imagination does it.

Few in the United States do not know what a Blueberry is. The name—sometimes Huckleberry or Whortleberry—brings to mind little blue-black round berries, averaging smaller than peas, and tasting—well, tasting like Blueberries, which are not like anything else, and are not like each other. Who does not remember an occasional Blueberry that seemed better than its fellows in the dozen and more that a teaspoon holds? In pies, all Blueberries we have known tasted alike, and the taste was good; but eaten as a dessert fruit, we have needed sugar and milk—or cream, if Mother wasn't watching—"to bring out the flavor." It has not always been certain whether we were eating the combination for the Blueberries or for the sugar.



A BLUEBERRY PACKING SHED AT WHITESBOG

Note how much lighter colored some quarts of berries are than others; this is because they are from seedling plants, each of which is different. The berries are carefully inspected and each quart is covered with a paper cap before being packed in 32-quart crates. The caps for the best berries carry the brand, "White Star Blueberries" and the grower's name, Joseph J. White, Inc., New Lisbon, N. J.

Now for the call on the imagination. Conceive of Blueberries that will hardly slip through a wedding ring—unless your wife is a giantess. Conceive that these Blueberries, unbelievably big, are all good and sweet; and imagine eating them separately, one at a time, as you would eat a good cherry or a good strawberry. Sugar? Not necessary! Cream or milk? Well, a possible, but not an important adjunct, unless as an excuse to add the sugar the Blueberries do not demand. Conceive, too, that there is a piquancy of flavor, a faint trace of attractive acidity, in these impossible Blueberries.

Such is the Blueberry as it is here desired to set forth. It is the color of some of the Blueberries you have known, but that is the only definite resemblance.

Let us go further in this demand on the imagination, so as to have the actual truth more easily bloom in our minds. The old-fashioned Blueberries grew on several sorts of bushes, some a foot high, some a yard high, and some as tall as a man. Some were crowded with fruit, in great clusters of ripe and unripe berries; some were but sparsely set. Some were mildly attractive as plants, at least until the fall frosts set the foliage glowing in crimson.

But these super-Blueberries are otherwise borne on compact and sightly plants, many of them as handsome in foliage as any prized broad-leaved evergreen. The fruit comes on them in astonishing clusters, in various stages of ripeness, all covered with a whitish "bloom" that seems like Nature's veil. One dislikes to take out the riper berries, yet easily does it so rapidly that the quart-box is filled in less minutes than it took to get the box a quarter full of the familiar wild Blueberries, and that without walking to a dozen or more bushes. Is it any wonder that the pickers in a field of these super-Blueberry plants make records of a hundred quarts in a day?

The photographs ought to aid the imagination in arriving at the size factor, but the merits of these Blueberries in flavor and sweetness will have to be accepted on faith, on the imagination these words seek to stimulate into action.

There *are* "Blueberries *and* Blueberries."

THE HISTORY OF THESE SUPER-BLUEBERRIES

How did they come about? The story is too long to be told here, though intensely interesting. It may be briefly stated and it also may well be summarized in a single phrase—*Selection and Hybridization, plus Care and Culture.*

The cultivation of unselected Blueberries has in at least two nstances resulted in definite plantations that produced profitable and continuous crops.

The first of these plantings included a little less than two and a

half acres, near Elkhart, Ind. It was described in a publication of the United States Department of Agriculture, issued in 1910, by Frederick V. Coville, Botanist of the Department, who says, "It was started in 1889 in a natural Blueberry bog, which was first drained and then set with unselected wild Blueberry bushes. The plantation was profitable from the first."

Another similar plantation was that called a "huckleberry orchard" by its originator, who justifies the name when he tells us that the bushes are 10 to 12 feet high. An account of Mr. Sapp's plantation was given by Mr. George E. Murrell in the *Journal of Heredity* for June, 1919. Mr. Sapp himself tells his story in *The American Fruit-Grower* in November, 1919. He began with the idea of digging up "a few bushes from the swamps nearby as an experiment to cultivate around my premises for home use, hoping to enlarge and improve the fruit in quantity and quality." Succeeding promptly in his aim, his neighbors demanded fruit. He kept on until he had six acres in the "huckleberry orchard," and he has never yet been able to "fill half of the orders that are received from the first of June to September, the fruiting season," though he says that he often picks "from ten to twenty-five quarts at one picking from one clump of bushes."

Other minor instances of success are available. They serve to settle the soundness of Blueberry culture, even with unimproved plants, which means, without doubt, a very great new source of satisfactory and delightful food for production from lands otherwise waste or nearly waste; for the Blueberry requires acid or sour soil.

THE SCIENTIFIC DEVELOPMENT

Since 1911, Blueberry improvement has been studied in an orderly way by coöperation between the Bureau of Plant Industry in the Federal Department of Agriculture and the firm of Joseph J. White, Inc., New Lisbon, N. J. Those who organized the latter firm have been extensively engaged for three generations in Cranberry culture in New Jersey.

It should here be noted that, botanically, the Blueberries are in the same family as the Cranberries, so that to a certain extent soil conditions for one fruit are favorable for the other.

Frederick V. Coville, the Botanist of the United States, who operates in the Bureau of Plant Industry at Washington, has intensively studied Blueberry development under the favoring conditions provided by Joseph J. White, Inc., at the Cranberry plantation known as "Whitesbog," near Browns Mills, N. J. There selection, hybridization, cultivation, and scientific testing, have all been thoughtfully practised for ten years.

About twenty-five acres of established plants have resulted, and

the sight of the fields during the weeks of fruiting is calculated to stir the blood of a visitor who is interested in the food necessities and the food possibilities of the land, or, to put it much more simply, who likes Blueberries,

At no time in these ten years of patient study and experimentation have any of the painstaking workers been satisfied that a finished result had been secured; yet the marketing of the relatively large product, and the prices eagerly paid for the berries that were so marketed, have indicated that with less high ideals, there might long ago have been put over a plant-selling campaign of an unusual character.

THE FUTURE OF BLUEBERRY CULTURE

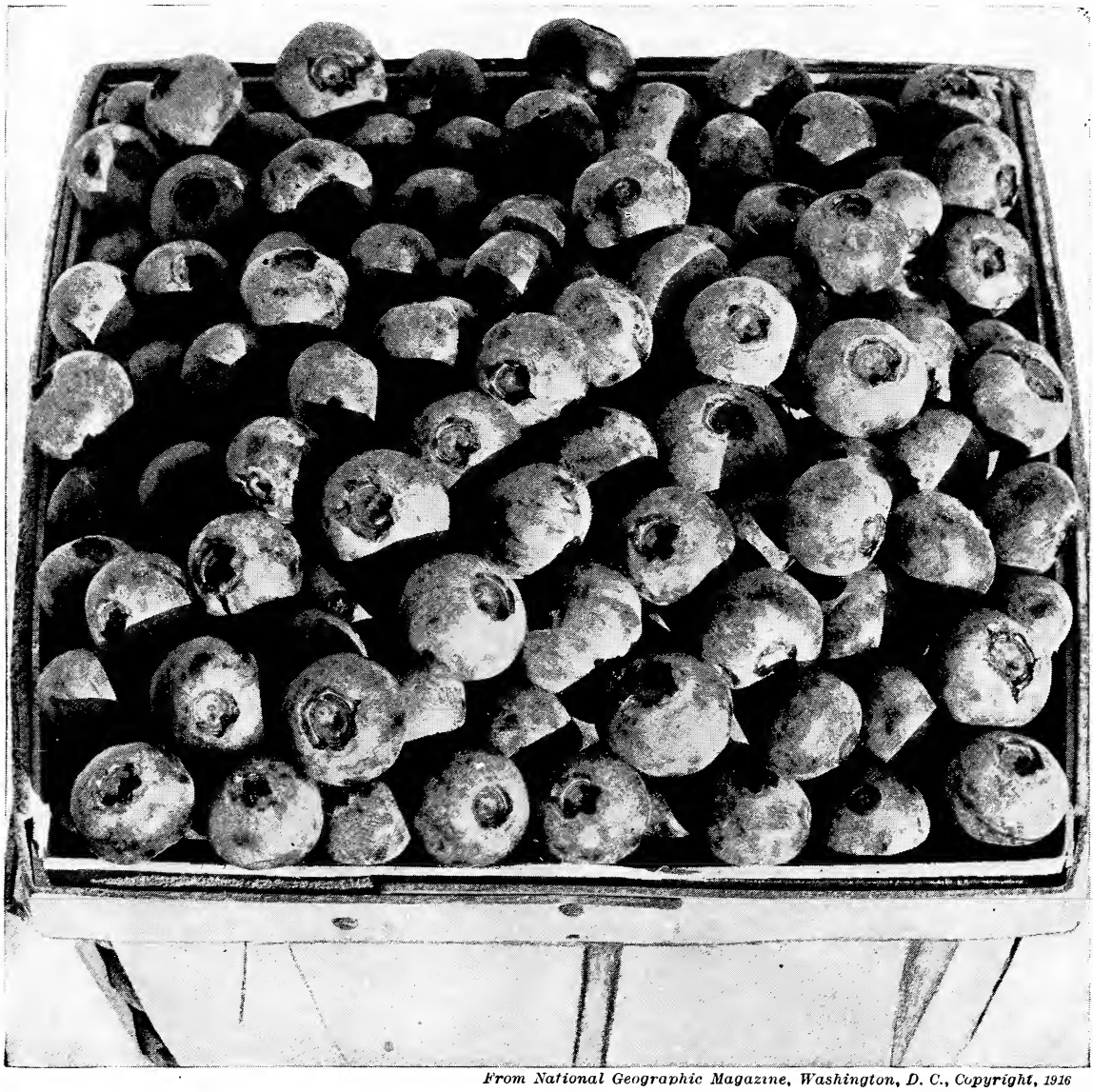
It is believed that the thoughtful, painstaking, and discriminating grower who has access to suitable land, who will understand that Blueberry culture is in a state of development, may make satisfactory profits by the use of these wonderful varieties as they are obtainable. No one, however, must get the impression that these Blueberry plants can be set out anywhere by anybody under any conditions and produce fruit profitably, as would the blackberry or the currant. The future of the Blueberry industry rests on the nice balancing of irrigation and drainage and in the use of suitable land. Much land that is now waste is admirably suited to Blueberries and may be made very profitable by the use of these new varieties. To capable experimenters we fully commend the effort.

BLUEBERRIES FOR ORNAMENT

It is well known that the flowers of *Vaccinium corymbosum*, the species mostly used in the production of these super-Blueberries, are beautiful, and that in fall the foliage turns to beautiful shades of crimson. Indeed, the shrub is commended by the Arnold Arboretum of Harvard University as one of the very best for its purely ornamental uses.

These new varieties introduce new factors in foliage, in flower, and in fall color. Many of the plants are of distinctly globose form, and with large and attractive leaves during all the growing season. With their daintily tinted flowers they are exquisitely beautiful, and that beauty is changed, but not diminished, as the crop succeeds the flowers.

It is believed, therefore, that with the provision of suitable soil, as is nearly always possible, there exists a notable use for these super-Blueberries in ornamental plantings.



From National Geographic Magazine, Washington, D. C., Copyright, 1916

A QUART OF RUBEL BLUEBERRIES

Rubel bushes are remarkable for their beauty, vigor, and symmetry. The original was over 6 feet high and nearly as broad. The coloring is exquisite the year round: Ruddy sprouts, pink buds and white flower bells come in the spring. July brings great clusters of light blue berries to contrast charmingly with the deep green foliage. Autumnal frost turns this to richest crimson and all winter long the red twigs are most cheerful.

Whitesbog Blueberries

By ELIZABETH C. WHITE

GOOD varieties of fruit must be planted if our labor of cultivation is to be rewarded.

A wild apple tree which produces forlorn, puckery little apples, even if cultivated, fertilized, pruned, and sprayed in the most approved manner, never yields fruit that tempts you to buy it, and if you bite into one of the little apples you find no pleasure in its taste. On the other hand, when the original Baldwin apple tree was found—a chance, wild seedling—the apples were large, beautifully red, and of delicious flavor. Now, Baldwin apples, brought to greater perfection by careful culture, so charm the coin out of your pocket by their beauty that you are glad to have exchanged it for anything so delicious.

When Blueberry culture was undertaken at Whitesbog, the most pressing problem was that of securing good varieties.

But what are Blueberries, and how do they differ from Huckleberries? Dr. Coville explains: "In the southern United States and in the Middle West blueberries are not ordinarily distinguished from huckleberries, but in New England the distinction is very clearly drawn. The name huckleberry is there restricted to plants of the genus Gaylussacia, the berries of which contain 10 large seeds with bony coverings like minute peach-pits, which crackle between the teeth. The name blueberry is applied in New England to the various species of the genus Vaccinium, in which the seeds, though numerous, are so small that they are not noticeable when the berries are eaten. It is probable that the comparatively low estimation in which this fruit is held in the South is largely due to the lack of a distinctive popular name and the consequent confusion of the delicious small-seeded southern Vacciniums with the coarse large-seeded Gaylussacias."

The southern lack of distinction between these two fruits prevails in New Jersey where all kinds of wild Blueberries and Huckleberries are called Huckleberries, but the New England term Blueberry has been adopted for those cultivated at Whitesbog.

Varieties of Whitesbog Blueberries have been secured in two ways: by selection from wild bushes and by selection from seedlings of chosen parentage.

SELECTION FROM WILD BUSHES

Whitesbog is in a section of New Jersey from which thousands of bushels of wild, High-bush Blueberries, or Swamp Huckleberries as they are called locally, are marketed each year.

Selection was started by offering a price for wild Blueberry bushes with extra-large berries. This stimulated a search of the swamps within 20 miles of Whitesbog, and those who pick the berries for market brought in many samples of fine fruit. Between 1911 and 1916 a hundred bushes were purchased, with berries five-eighths of an inch or more in diameter; two had berries fully three-quarters of an inch across.

As Blueberries do not "come true" from seed, the selected wild bushes were divided into many pieces from which young plants were grown. Those from each original bush were kept separate and the plants of each lot have their own particular characteristics, perpetuating the peculiarities of the bush from which they came; in other words, the plants from each original bush constitute a separate variety.

The chief characteristics considered in selecting varieties are size, flavor, texture and time of ripening of the berry and productiveness and vigor of the plants. A very important quality is resistance to injury by occasional spring frosts; for one variety is uninjured by frost when another growing beside it has its blossoms and young growth killed.

The first selection of wild bushes was necessarily based on size of berry, but a careful study of all characteristics was made during several years when numerous young plants grown from the original bushes produced crops under field culture. As a result, most of the varieties were discarded.

Six only, of the hundred, were considered worthy of further multiplication for commercial fruit production. These are known as Rubel, Harding, Sam, Dunfee, Adams, and Grover, each name perpetuating that of the discoverer of the original plant. These varieties of Blueberries are as distinct one from another as are varieties of strawberries, apples, or any other fruit.

SEEDLINGS OF CHOSEN PARENTAGE

All during the time that selection of varieties from wild bushes has been in progress, Dr. Frederick V. Coville, Botanist, of the United States Department of Agriculture, has been improving Blueberries by breeding.

The varieties of wild origin selected at Whitesbog and a few plants from other parts of the country have been used as parents. More plants from different parts of the country could be used to advantage in the breeding work. For this reason, Joseph J. White, Inc., offers $25 to $50 each for good plants with berries nearly or quite three-quarters of an inch in diameter. Write for particulars.

When the breeding work reached a point where it was desirable to try the seedling plants in the field, the Department of Agriculture contracted for trial-grounds at Whitesbog. Under the terms of the contract, Joseph J. White, Inc., has the right to half the propagating material from all desirable Government seedlings there tried, but agrees not to propagate for sale any hybrid not approved by the Department.

The hybrid seedlings are kept at Washington a year and then sent to Whitesbog where they are set in the field about September 1. The second summer in the field they sometimes produce a few berries, and the third summer a commercial crop.

Seedlings of the same parentage have a certain family resemblance, so much so that those familar with the parent plants can frequently recognize the origin of a group of seedlings without reference to the elaborate records. Yet no two plants of the same parentage are alike; consequently no two plants in the trial-fields are alike, and each is the possible beginning of a new variety.

More than 27,000 plants have been set in the trial-fields, of which about 18,000 have produced fruit. Of all these only three have been approved by the Department and are being propagated for commercial fruit production at Whitesbog and to produce plants for sale.

In the breeding records these three Coville hybrids are known as 620A, 830C, and 834A, but have now been christened by Dr. Coville, Pioneer, Katharine, and Cabot. These hybrids are much larger than their parents, the best Blueberries known when these early crosses were made, but they are little if any larger than Rubel, Harding, and other varieties since found.

DESCRIPTION OF VARIETIES

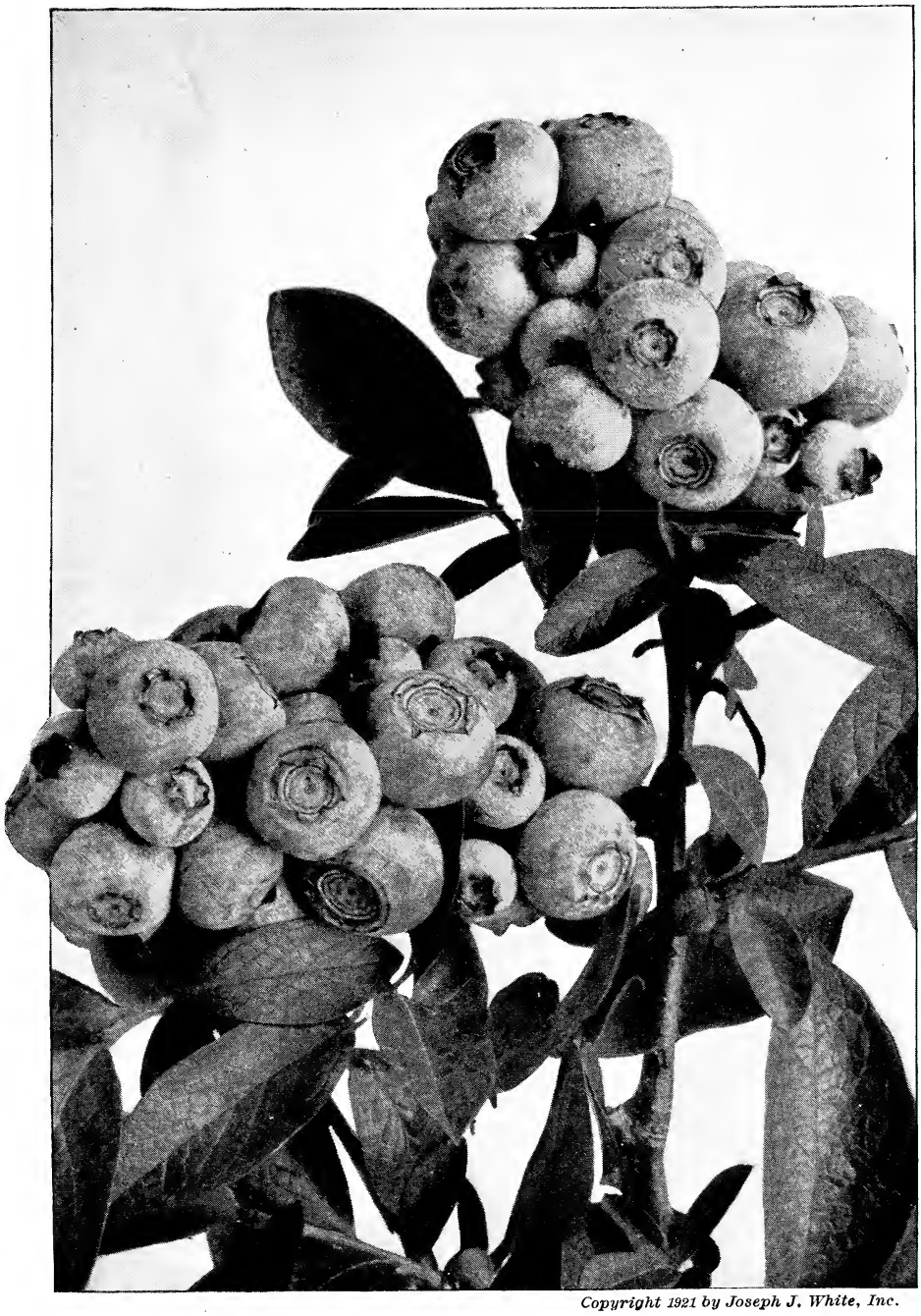
Whitesbog Blueberries average well above half an inch in diameter, with an occasional three-quarter-inch berry. People frequently speak of them as seedless, because the seeds are so small. They are all High-bush Blueberries (*Vaccinium corymbosum*) and grow from 4 to 8 feet in height. The plants are remarkably free from attack by insects or disease.

RUBEL bushes are remarkable for their beauty, vigor, and symmetry. The original was over 6 feet high and nearly as broad. The coloring is exquisite the year round: Ruddy sprouts, pink buds and white flower bells come in the spring. July brings great clusters of light blue berries to contrast charmingly with the deep green foliage. Autumnal frost turns this to richest crimson and all winter long the red twigs are most cheerful. A large proportion of Rubel berries are over $\frac{5}{8}$ inch in diameter. If picked soon after they color, sugar is needed to temper the pleasant acidity, but if left on the bush a week or two they grow sweeter without deteriorating. Their keeping and shipping qualities are unusually good.

HARDING berries are sweet and of especially fine flavor; a most delicious fruit for the home table and nearby markets, but a little too tender, possibly, for long shipment. They ripen a few days earlier than Rubel. The berries are about the same size and much darker blue. The plants are vigorous and the autumnal coloring fine.

SAM berries are uniformly large and produced in immense clusters which ripen earlier than Rubel or Harding. They are a beautiful light blue and of delicious flavor. The foliage is rich and heavy in texture and the leaves are veiled with a delicate bloom, in consequence of which the summer foliage is bluish green, somewhat the color of cabbage leaves, and there is a charming hint of violet over the autumnal crimson. The winter twigs are red.

ADAMS is the earliest of these varieties. The berries do not often exceed $\frac{5}{8}$ inch in diameter, but they are remarkably uniform in size, of excellent flavor, and produced in immense quantities. They are of medium blue and have a tendency to be pear-shaped. The bushes are symmetrical and well formed. The autumnal coloring is not remarkable and the winter twigs are green, but the summer foliage is probably the best of all the Whitesbog Blueberries. The lustrous, dark green leaves, of heavy texture, resemble those of some of the most prized broad-leaved evergreens and call forth the utmost enthusiasm from plant-lovers.



PIONEER, ACTUAL SIZE

GROVER berries are among the largest, with flavor and texture unsurpassed. They ripen almost as late as Rubel. The bushes are strong and vigorous, but compared with other varieties in this group are not remarkable for their beauty.

DUNFEE produces immense quantities of large dark berries, which many visitors say are "the best of all." The foliage, of heavy texture, is peculiar in that the first spring growth is mottled with grey lines as if the leaves were covered with light cobwebs, but the summer growth is uniformly a deep glossy green. The autumn coloring is exceedingly beautiful and the winter twigs the brightest red of all.

RALPH is being propagated for its beauty. The berries are not large enough to meet the Whitesbog standard for commercial fruit production, as few of them surpass ½ inch in diameter. They are, however, uniform in size, early, of good flavor and a beautiful light blue. They are borne in large, graceful, somewhat drooping clusters. The bushes are compact and symmetrical, the foliage is good, and the autumn coloring gorgeous.

The point on which Ralph scores above every other variety of Blueberry, however, is in the exquisite beauty of its flowers. All Blueberries have beautiful flowers—clusters of waxy white bells, with buds greenish or pink according to the variety—but none equal those of Ralph in slender grace of form or rosy coloring, which delicately tints the flowers and shades to carmine in the buds. A very lovely variety.

PIONEER (Coville hybrid 620A) is the first seedling from the Government trial-grounds selected for propagation. In 1917, when the plant was five years old from seed, it was picked four times and yielded a total crop of 2½ quarts. There were 394 berries in the *third* picking of which only 30 were less than ½ inch in diameter. The berries are light blue, sometimes slightly streaked, as if they had grown so large there was not enough blue to cover them all over. The flavor is good. The foliage, of heavy texture, is fine in its autumnal coloring and the winter twigs are red.

CABOT (Coville hybrid 834A) is an early berry, very large and of attractive appearance. In flavor it is one of the best, a delightful combination of sweetness and sub-acidity.

KATHARINE (Coville hybrid 830C) is of the same parentage as Pioneer. The two were selected from over 3,000 seedlings of one of the early crosses made by Dr. Coville. The berries of Katharine ripen a week to ten days later than those of Pioneer; they average larger and are exceedingly beautiful. The rich green foliage is so heavy in texture that a noted botanist, seeing it for the first time, insisted that those leaves *must* be evergreen. The autumnal foliage and red winter twigs are very similar to those of Pioneer in richness of color.

HARDINESS AND LENGTH OF SEASON

Whitesbog Blueberries are all hardy in central New Jersey. They came through the remarkably severe winters of 1917-18 and 1919-20 in perfect condition. They are also resistant to injury by spring frosts. There is good reason to believe them adapted to a wide range of climate, but they can hardly be expected to thrive through the whole range of wild Blueberries, various species of which abound from the Gulf Coast to Alaska and Labrador. In climates markedly different from that of New Jersey, the cultivation of a few of the best local bushes, in comparison with those from Whitesbog, would lead to further knowledge of the most desirable kinds for different parts of the country.

At Whitesbog, the named varieties ripen from about July 4 through the second week of August. Varieties are being selected which will start the Whitesbog Blueberry season about the middle of June and others can be selected which will carry it beyond the first of September. The steady work for pickers which so long a season provides is an important consideration in commercial Blueberry culture.

REVENUES FROM WASTE LAND

Whitesbog Blueberries make possible large revenues from thousands of acres which are now waste land. This is demonstrated by results which have already been secured. Though none of the bushes are old enough to yield a full crop, the older portion of the trial-fields produced 96 bushels per acre in 1919 and 117 bushels per acre in 1920. The plants, however, are spaced 3 by 5 feet and yield more per acre while young than if spaced 4 by 8 feet, as the fields are now planted.

The berries marketed from Whitesbog up to 1921 were all from plants under trial, consequently they were much inferior in size and

quality to those of the Whitesbog varieties, yet they were eagerly purchased at from 30 to 60 cents per quart, wholesale. After deducting transportation and commission charges, the 1919 crop of 300 bushels sold for an average price of about $10 per bushel, the 1920 crop of 500 bushels at an average price of about $12 per bushel, and the 1921 crop at an average price of about $12.50 per bushel. The latter amounted to 300 bushels, only half a normal crop, but even so demonstrates possibilities for Blueberry culture. The frost which injured the Blueberries almost wiped out the Jersey peach crop and took more than half the apples. As the Whitesbog named varieties showed a frost-resistance much greater than the average of the plants under cultivation, the prospect for good crops of Blueberries in poor fruit years seems excellent.

BLUEBERRY CULTURE

Consideration of the conditions under which wild Blueberries thrive is a helpful preliminary to Blueberry culture.

Blueberries require an acid, peaty soil and a water-supply so balanced during the growing season that the roots never dry yet always have air. These requisites are found in widely different situations, for Blueberries abound on mountainsides and hilltops, in swamps and neglected pastures. When found on dry hillsides, the Blueberry areas, by reason of their particular slope in reference to prevailing winds, gather from mist and cloud sufficient moisture to carry the plants through summer drought. In swamps, where the Blueberry picker wades knee deep, the bushes are perched on tussocks, the loose, open texture of which gives the rootlets access to air.

Blueberry plants may survive a season unfavorably wet or dry but crops are uncertain unless the supply of moisture is well balanced. Careful investigation of possible water-supply and drainage should therefore be made before deciding on a location for commercial Blueberry culture. Some locations may naturally have an abundant water-supply and require artificial drainage. For others, anything from a garden hose to an elaborate overhead irrigating system may supply water, while drainage takes care of itself.

When Blueberries are to be grown for profit, a soil which naturally suits them should be chosen. Such soils are abundant, as indicated by the distribution of wild Blueberries and allied plants. In many parts of the country these soils are also cheap because too acid for ordinary agriculture.

THE WHITESBOG METHOD OF CULTURE

As the physical character of wild Blueberry land varies, so may vary the methods of cultivation by which the essentials of acid, peaty soil, constant moisture, and good drainage are maintained.

The following description of the method of cultivating Blueberries at Whitesbog is therefore given, with no thought that it is the only way, or necessarily the best, but that it may suggest to other pioneers the possibility of taking advantage of local conditions.

The Whitesbog Blueberry fields are being developed in connection with older cranberry bogs, on ground a little too high for cranberries and heretofore considered useless. The soil is white sand overlaid with a peaty layer from 2 to 6 inches deep. Before plowing, the land is overgrown with wild Blueberry and other bushes. After plowing, the fields are kept cultivated a year or more to kill the original growth before they are planted.

The plants are set about the last of August, or in early spring. They are spaced 4 feet apart in rows 8 feet apart. It is anticipated that later it may be necessary to move half the plants, leaving the spacing 8 feet each way.

The Blueberry fields are underlaid with a "hard-pan" 2 feet or more below the surface. At a level higher than the fields are reservoirs, from which water percolates through the sandy soil above the hard-pan for a great distance, because the hard-pan prevents its sinking into the ground.

These reservoirs were built for the benefit of the cranberry bogs, and the seepage from them, which now irrigates the Blueberry fields, was wasted. Undoubtedly the swamp water from the reservoirs, clear, brown, and slightly acid, contributes plant-food as well as moisture. Drainage is cared for by lines of tile laid just above the hard-pan.

The resulting balance of moisture and aëration is very successful, except for a few small areas which are still too wet. On them, in consequence, the plants are dead or dying.

Clean cultivation keeps down the weeds, which are not very troublesome on this new land. It also assists in maintaining good ventilation of the soil, so essential to the welfare of Blueberries.

A chemical fertilizer[1], containing approximately 5 per cent nitrogen, 14 per cent phosphorus, and 4 per cent potash, applied at the rate of 500 pounds per acre, per year, has given good results in increased crop and plant-growth.

[1]Further information in regard to fertilizing Blueberries at Whitesbog can be obtained from an article by Chas. S. Beckwith, entitled "The Effect of Fertilizers on Blueberries," which appeared in *Soil Science*, Vol. X, No. 4, October, 1920. Reprints of this article may be obtained from Mr. Beckwith, New Jersey Agricultural Experiment Station, New Brunswick, N. J.

A BIT OF THE GOVERNMENT TRIAL-GROUND AT WHITESBOG

The plants in this field are set 4 by 8 feet. When planted, three years and ten months before being photographed, they had one or two slender stems about 6 inches high and a root ball from a 2-inch pot.

The bush on which the berries are being measured with a Blueberry gauge is carrying a crop of three quarts. If all the bushes bore such a crop it would amount to more than 125 bushels per acre. These plants are babies, but wild bushes have been known to yield half a bushel at one picking and to produce abundantly for more than fifty years.

WILL BLUEBERRIES GROW IN THE GARDEN?

Yes, when their needs are understood and met. Some special preparation of the soil and care of the plants is, of course, necessary, but less than that demanded by many other plants commonly grown in gardens.

Acid peat, such as Blueberries need, may be defined as vegetable matter in an incomplete state of decomposition. Freshly fallen leaves, twigs, old wood and rootlets, dead but still sound, are quite acid. They are also full of plant-food but in a form in which plants cannot use it. As these leaves, twigs, etc., rot they become less acid and the food they contain is released so that plants can use it. When disintegration is nearly complete they lose their acidity. The ordinary processes of cultivation hasten the disintegration of vegetable matter in the soil, causing it to lose its acidity unless the tendency is overbalanced by the chemical composition of the rocks from which the soil is derived, by a cool damp climate or in some other way.

Consequently the soil for Blueberries should be mixed with partially rotted leaves or similar material, which must be prevented from reaching the non-acid stage of disintegration by annual applications of freshly fallen leaves or other sound vegetable matter, the leachings from which will preserve soil acidity. Besides maintaining acidity, annual additions of leaves keep up the supply of plant-food.

Furthermore, a heavy mulch of leaves goes a long way toward maintaining a properly balanced supply of moisture, for it holds water in a porous mass through which air penetrates freely. This is most important where no special system of irrigation and drainage is provided, and it is impractical to cultivate with horse- or motor-drawn machinery.

TO GROW BLUEBERRIES IN THE GARDEN

A location that is *well drained* should be chosen. It is commonly believed that Blueberries like a wet soil. It is true they like abundant moisture provided they are growing in fluffy material, such as moss or loose partially decayed vegetation, but nothing discourages them more than soggy, wet ground. This is because excess water in the soil excludes air and thus prevents root-development or confines it to the immediate surface where the roots are quickly killed by subsequent drought. Because of their need of air, Blueberry roots always develop near the surface, but if well-aërated soil is

maintained, myriads of rootlets grow to a depth of 6 or 8 inches, and the deeper the root development the greater the resistance to drought. Then it is easier to supply water during dry weather than to get rid of an excess during a rainy spell; so *be sure to give Blueberries good drainage.*

Full sun is usually to be preferred, but if such a location is not convenient, partial shade may confidently be tried, as wild plants are found thriving under both conditions.

POLLEN FROM WILD BLUEBERRY bushes, near the selected location will have no detrimental effect upon the fruit of choice varieties, but seedlings grown from such fruit would combine the characteristics of the wild plants with those of the choice varieties.

IT IS ESSENTIAL that at least two varieties of Blueberries grow near together, for, as Dr. Coville explains, "When Blueberry flowers are pollinated with pollen from their own bush the berries are fewer, smaller, and later in maturing than when the pollen comes from another bush. Some bushes are almost sterile to their own pollen. The pollen of a plant grown from a cutting is likewise unsatisfactory for the pollination of the parent plant or of other plants grown from cuttings of it. It is important, therefore, that a plantation should not be made up wholly from cuttings from one bush."[2]

PREPARE THE SOIL, if light and sandy, by thoroughly mixing a 6-inch layer of peaty material with the top 12 inches. In heavy soil it is best to dig a trench, 4 feet wide and about a foot deep, and fill it with a mixture of two-thirds sand and one-third peaty material. *Never use lime or stable manure.* For peaty material, partially rotted leaves are recommended because excellent results have been secured by using them. Those which rot quickly, such as maple leaves, do not answer the purpose so well as those which rot slowly, like oak leaves, pine needles, or laurel leaves. The "peat" easiest for many people to obtain is partially rotted sawdust or the partially rotted chips and litter always to be found around an old wood-pile. This is excellent material. Spent or live tan bark, used in connection with a leaf-mulch, is recommended by a prominent rhododendron grower, who says, "it has proved an active agent in producing persistent acid conditions where the soil is not naturally acid." It has been suggested that apple pomace or unsalable beet pulp might be suitable peaty material and it would be interesting to have them tried.

[2] From "Directions for Blueberry Culture," 1916. A new and beautifully illustrated edition of this bulletin is ready for distribution and can be obtained by addressing Dr. Frederick V. Coville, Department of Agriculture, Washington, D. C.

Plants May Be Shipped and Set in early spring, or about the last of August. If the distance is great, and especially if the shipment is to a colder climate, early spring is to be preferred. At that season the plants can safely be kept for weeks, at a low temperature, in the original Whitesbog packings. When plants are received in warm weather, if the soil is not prepared, they may be heeled in where the sun will not strike them. Never permit the roots to dry.

Wild Bushes to be tried under cultivation should be carefully selected and marked while in fruit. Moving is best done after the leaves fall and before the buds start in spring. At the time of digging cut the top off 3 to 4 inches above the surface of the ground, so as to insure a shapely new top of a size to properly balance the cut roots. If it is desired to obtain a large specimen plant quickly, the entire root may be planted in the prepared ground, but if a number of plants are desired the root may be divided. This requires vigorous use of saw and hatchet. The large pieces may be permanently planted in prepared soil but small ones are more easily cared for when planted close together in a nursery bed. Pieces ½ inch in diameter and 3 to 4 inches long may so be used. The pieces should be covered with about an inch of peaty soil. The sprouts which come up through this soil form new roots at their bases. After these roots are well developed each sprout is a perfect plant which, if desired, may be carefully separated from the old root. Thus a hundred or more plants may sometimes be secured from one large wild bush.

Space Blueberries at least 4 feet apart, otherwise the branches will interlace within three to four years. This checks the development of the plants and makes picking difficult.

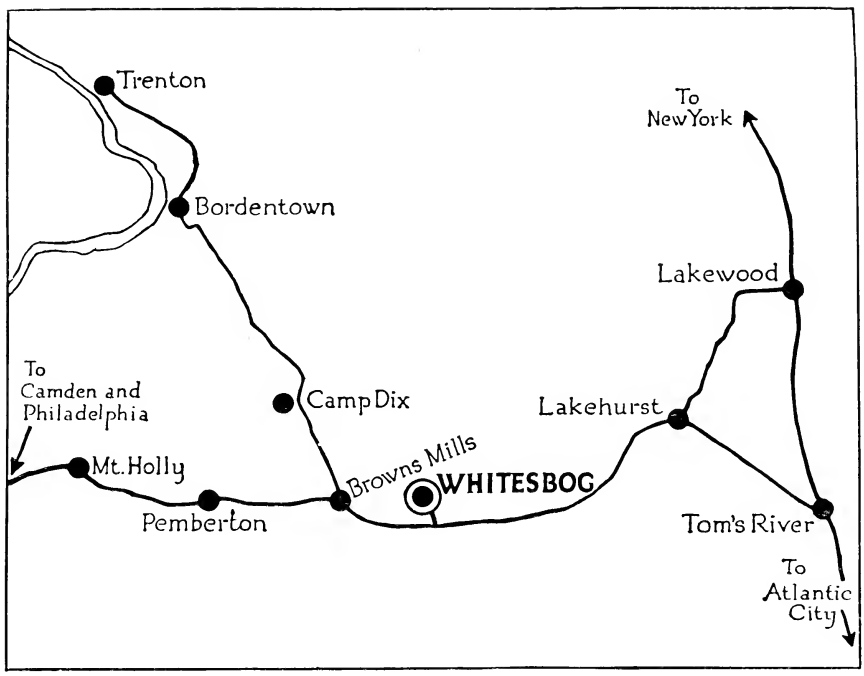
Set the Plants about half an inch deeper than they were in the nursery and water thoroughly.

Mulch, with Peaty Material, an area larger than the roots can possibly cover, taking care not to smother the plants while small. The roots will reach out farther from the base of the plant than the top does above it, and, under favorable conditions, growth is surprisingly rapid.

Maintain the Acidity of the Soil and the supply of plant-food with heavy additions of leaves each fall. After the first season the mulch should be 6 inches or more deep. Never remove this mulch but let it remain the year round and every fall add a new layer.

WATER SHOULD BE GIVEN AS NEEDED. When the foliage retains its rich green color till crimsoned by frost, the supply of water is very nearly correct. If the plants become too dry the edges of the leaves wither and turn brown. When the Blueberry has congenial, peaty soil and the leaves turn red or purplish before frost, the plant is too wet. It is an interesting fact that these leaves turn green again if drainage is promptly effected.

When understood, the needs of the Blueberry are easily met and the successful Blueberry grower has a double reward—the beautiful bushes are worthy to be the most prized ornaments of shrubbery or lawn and they yield wonderfully delicious fruit, especially if they are Whitesbog Blueberry plants.



ROADS TO WHITESBOG

Whitesbog is 4 miles from Browns Mills. The buildings of the village can be plainly seen from the gravel road.

From New York take the train to Camp Dix, where jitneys can be secured for the 9 miles to Whitesbog.

From Philadelphia take the train at Market Street Ferry to Browns Mills, if you wish a jitney; or to Hanover Farms, if you prefer to walk 2 miles.

Good meals and rooms can be had in Browns Mills.

July is the Blueberry month at Whitesbog. The blossoms come in April or early May. October or early November brings the most gorgeous autumnal coloring.

Visit the Blueberries at Whitesbog—you are most cordially invited—but send letters about them to

JOSEPH J. WHITE, Inc.
NEW LISBON, N. J.